US-PAT-NO: 6212504
DOCUMENT-IDENTIFIER: US 6212504 B1
TITLE: Self-authentication of value documents using encoded indices
DATE-ISSUED: April 3, 2001
INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hayosh; Thomas David	Bloomfield Hills	MI	N/A	N/A

US-CL-CURRENT: 705/64,235/375 ,705/72 ,705/75 ,705/76 ,713/100

ABSTRACT: A method and system as presented by which valuable documents such as checks, deeds, driver's licenses, and other types of valuable documents can be imprinted with encoded symbols by a printer whereupon multiple assemblages of data can be imprinted on the valued document which is then susceptible to readout by a document reader which will automatically authenticate and verify the originator or the document and its authenticity and obviate any attempts for fraudulent alteration.

27 Claims, 10 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 10

ABPL: A method and system as presented by which valuable documents such as checks, deeds, driver's licenses, and other types of valuable documents can be imprinted with encoded symbols by a printer whereupon multiple assemblages of data can be imprinted on the valued document which is then susceptible to readout by a document reader which will automatically authenticate and verify the originator or the document and its authenticity and obviate any attempts for fraudulent alteration.

BSPR: In order to enhance the method and means of authenticating data contained in valuable documents such as checks, deeds, passports, negotiable instruments or other authoritative documents, there are now provided enhanced code symbols and elements in addition to the public key based digital signature which can now more properly authenticate the data contained in the document and also can verify the authorship of the digital signer of the document . Thus in order to provide additional encoded information for authentication which would permit the detection of any alteration of the payee's name or the amount involved in the document, the data which is signed is to be made available in machine readable form either from the MICR code line or else contained in a bar code symbol along with its digital signature itself. A laser printer is useful here in printing a two-dimensional (2-D) bar code that can easily contain upwards of up to 360 8-bit ASCII characters per square inch of label.

DEPR: BMP graphics file format means a raster format for data that is bit mapped as used in Microsoft Window's applications. This file format is useful to contain an image of a font or picture and the window's application allows the picture to be inserted into a page that contains standard text as an example. Using software that is commercially available, there is used the label file shown in FIG. 10, (data3.lab) to generate a 2-D bar code. The bar code file was saved as a BMP file for importing into a Microsoft Word document that contained the other elements of the

check that was to be printed. There are other file formats that are equally useful for integrating the bar code into a check for printing using a laser or ink jet printer.

DEPR: MICR code line and Transaction Codes involve the bottom 5/8-inch high horizontal band on checks that is reserved for the MICR code line and MICR printing . The MICR code line contains MICR characters. These MICR characters allow the check to be processed at high speed in the automated check processing payment system. In the United States, over 99% of the checks are processed without MICR character read-rejects. Each MICR character is printed at a fixed pitch of 8 characters to the inch beginning from the rightmost 1/4 inch from the leading edge of the check. The lead edge is the right most edge of the check as its face is viewed. Checks are processed in reader/sorters moving from left to right so that the lead edge is always read first. A 6-inch check, which is the smallest size check in the United States, has room for 45 characters, but only 44 can be safely printed or encoded without running into borders or off the left edge of the check. Position 44 has been reserved for a special single digit field (FIG. 1) called the EPC field for External Processing Control field. A character in this position may impart special information to a processor of a check as it first enters the payment stream. A character [character pullout], for instance, indicates that the check is a candidate for image truncation. Recommended is the use of character [character pullout] or [character pullout] in the EPC field to indicate that this particular document contains a machine readable security feature. The character [character pullout] (FIG. 1) could be used when the EPC field indicates the document contains a machine readable security feature. The character [character pullout] then could be used when the EPC field would normally contain a character [character pullout] and the document also contains a machine readable security feature. The particular type of security feature would then be indicated by pointing to a fixed location in the On-Us field, such as the transaction code area, to the extreme right of the On-Us field, beginning in position 14. As an example, there is shown a transaction code [character pullout][character pullout] and [character pullout][character pullout] on FIGS. 2 and 3, respectively. It is expected that other machine readable security features may be offered by suppliers and there would be a need for multiple security systems to co-exist. The specific numbers used to identify this invention may be determined by a check standards subcommittee or consortium of bankers sometime in the future.

DEPR: Using about 300 bytes of data, the paying bank would have enough information to print a statement using "virtual checks" and perform verification that the amount encoded in the amount field is identical to the amount intended by the issuer, and that other machine readable data, i.e. the MICR line has not been altered. If the magnetic taggant option were used, there would be additional assurances that the check presented or paid was not or was an exact duplicate or copy of an original.

DEPR: FIG. 2 shows a check example which uses the same information as FIG. 1 to print the check except that the 2-D bar code symbol is elongated to 28 columns thereby reducing the number of rows to 6 rows and consequently reducing the overall height of the symbol.

DEPU: 21. MICR CODE LINE: This involves the bottom 5/8 of an inch high horizontal band

on checks which is reserved for the MICR Code Line and MICR printing . The MICR Code Line contains MICR characters.

DEPU: AUTHENTICATION PROCESS WITHOUT MAGNETIC TAGGANT OPTION: Documents may be authenticated by reading the MICR characters in E-13B or other code line data in some other font such as CMC-7 or in OCR and the 2-D bar code, which is read with an appropriate scanner which decodes this symbology. Alternatively, the document may be imaged and the bar code is decoded directly from the image itself.

CLPR: 1. In an imprinted valuable document having encoded symbols readable by a document reader, a method for enabling subsequent authenticating and verifying non-alteration of said document via a document reader, comprising the steps of:

CLPV: (a) imprinting a two-dimensional bar code on said document which includes an assemblage data group of information which, when read by a document reader, will automatically authenticate the source of the document and verify its original data as standing without alteration;